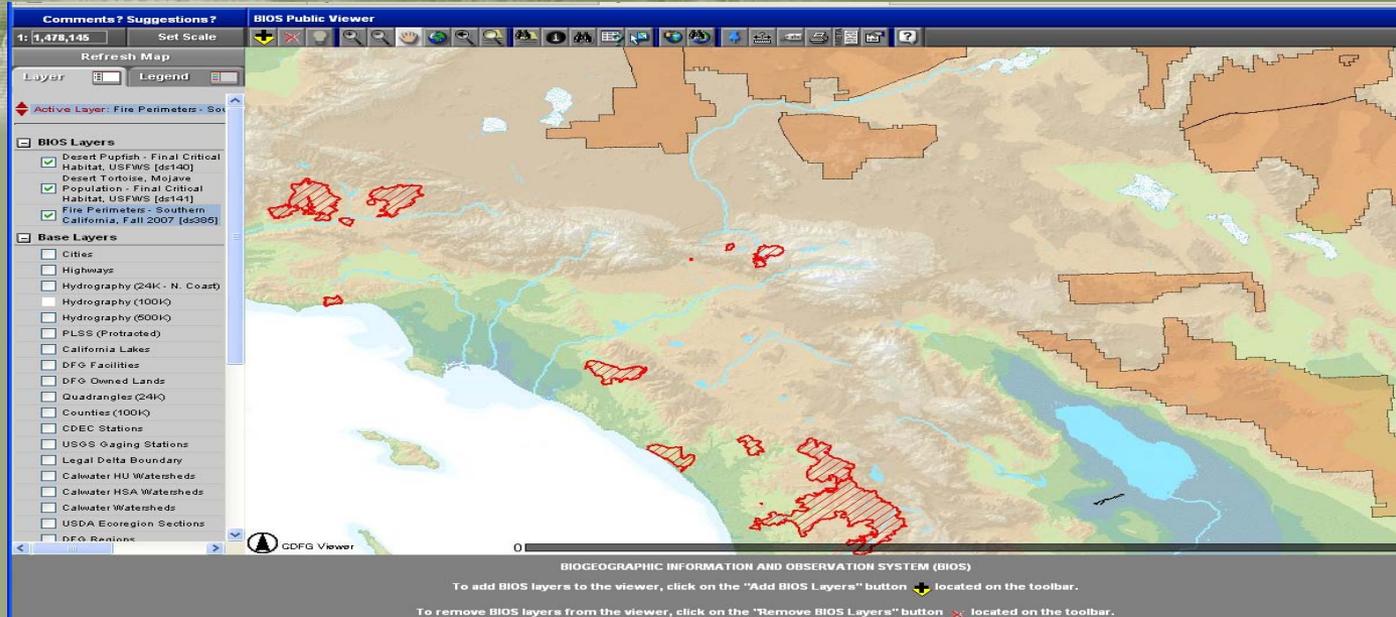


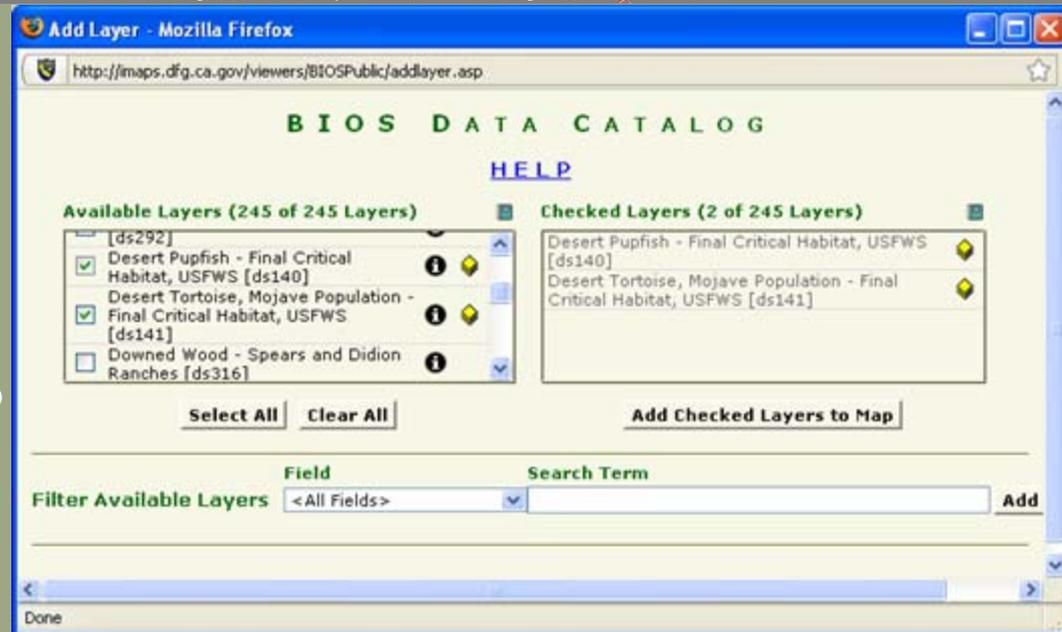


Biogeographic Information and Observation System (BIOS)

Tom Lupo
Branch Chief
Biogeographic Data Branch
Department of Fish & Game



- What is it?
- Some Examples...
- Why Was it Created
- How Might it Help You?
- Future Plans





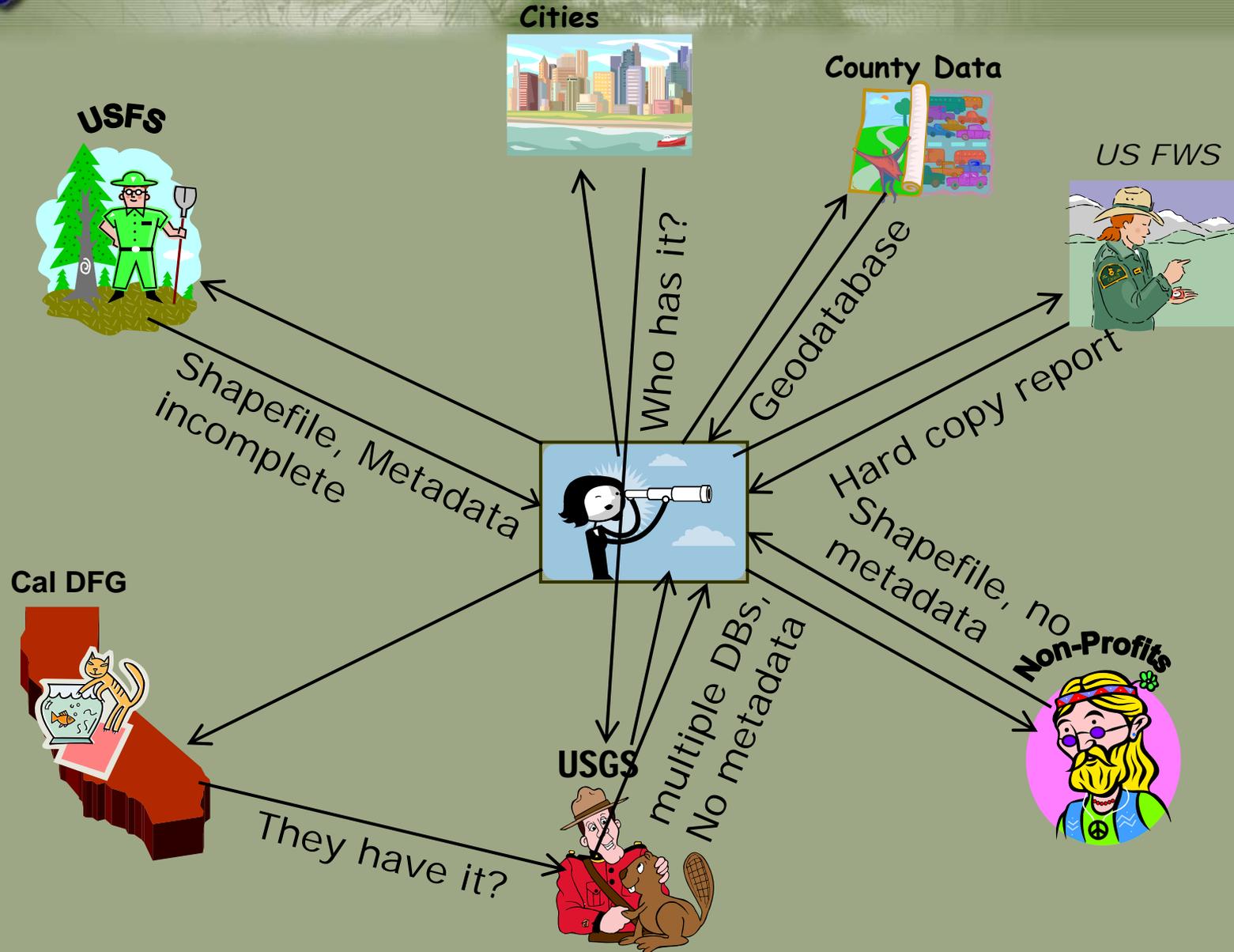
Why Create BIOS?

The challenges . . .

- Environmental resource data collection is increasing rapidly.
- Previously collected data are disappearing as employees change jobs or retire - "it's 'lost' in a filing cabinet/garage" problem...
- There is a lack of standardization in how data are recorded, stored and shared.



Typical Data Management Scenario





Why Create BIOS?

- Need for transparency in government decision-making
- Data/maps frequently not easily viewable, particularly with other features/resources.
- Need to protect our investment in data.
- Action to correct this will avert future crisis.



BIOS as Part of the Solution. . .

- Create an information system to locate and integrate hardcopy and digital data.
- Establish a data management system that provides a standard structure without confining the ability to gather or analyze data.
- Provide an information distribution system to facilitate use of the data by DFG employees, partners and the public.



A screenshot of the BIOS website displayed in a Mozilla Firefox browser window. The browser address bar shows "http://www.bios.dfg.ca.gov/". The website header includes the "CALIFORNIA DEPARTMENT OF FISH AND GAME" logo and navigation links for Home, Recreation, Resource Management, Enforcement, Marine, Spills, Education, and Data & Maps. The main content area is titled "BIOS BIOGEOGRAPHIC INFORMATION & OBSERVATION SYSTEM" and contains a description of the system, a list of "DFG GIS LINKS", "OTHER GIS LINKS", and "OTHER LINKS". A "Password Management" section is also visible on the right side of the page.

What is BIOS?

BIOS is a system for archiving and viewing biogeographic information in DFG (and information held by partners) and facilitating the sharing of that information with DFG employees, partners and the public.

It is an evolving collaboration tool/system and expected to change in response to DFG and partner needs and suggestions.



BIOS Custom ArcIMS Viewer

California Department of Fish and Game - IMAPS Viewer - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://imaps.dfg.ca.gov/viewers/biospublic/app.asp

Most Visited Getting Started Latest Headlines

DFGINtranet > Home

California Department of Fish & Game, ...

California Department of Fish an...

Comments? Suggestions? BIOS Public Viewer

1: 1,478,145 Set Scale

Refresh Map

Layer Legend

Active Layer: Fire Perimeters - Southern California, Fall 2007 [ds385]

BIOS Layers

- Desert Pupfish - Final Critical Habitat, USFWS [ds140]
- Desert Tortoise, Mojave Population - Final Critical Habitat, USFWS [ds141]
- Fire Perimeters - Southern California, Fall 2007 [ds385]

Base Layers

- Cities
- Highways
- Hydrography (24K - N. Coast)
- Hydrography (100K)
- Hydrography (500K)
- PLSS (Protracted)
- California Lakes
- DFO Facilities
- DFO Owned Lands
- Quadrangles (24K)
- Counties (100K)
- CDEC Stations
- USGS Gaging Stations
- Legal Delta Boundary
- Calwater HU Watersheds
- Calwater HSA Watersheds

Query - Mozilla Firefox

http://imaps.dfg.ca.gov/viewers/viewer4.18/query.asp?theServerName=mospa01a.geo.dfg.ca.gov&theS

Build query for active layer: Fire Perimeters - Southern California, Fall 2007 [ds385] help

Fields	Operators	All Unique Values
FIRE_NAME	=	'Ammo'
DATE_	<>	'Buckweed'
TIME_	>	'Cajon'
STATUS	>=	'Canyon'
AGENCY	<	'Coronado Hills'
SOURCE	<=	'Grass Valley'
ACREAGE	like	'Harris'

Query Command Clear

Run Query

Add Layer - Mozilla Firefox

http://imaps.dfg.ca.gov/viewers/BIOSPublic/addlayer.asp

BIOS DATA CATALOG

HELP

Available Layers (245 of 245 Layers)

- [ds292]
- Desert Pupfish - Final Critical Habitat, USFWS [ds140]
- Desert Tortoise, Mojave Population - Final Critical Habitat, USFWS [ds141]
- Downed Wood - Spears and Didion Ranches [ds316]

Select All Clear All

Checked Layers (2 of 245 Layers)

- Desert Pupfish - Final Critical Habitat, USFWS [ds140]
- Desert Tortoise, Mojave Population - Final Critical Habitat, USFWS [ds141]
- Downed Wood - Spears and Didion Ranches [ds316]

Add Checked Layers to Map

Add Layers

Field Search Term

Filter Available Layers <All Fields> Add

Metadata - Mozilla Firefox

http://imaps.dfg.ca.gov/viewers/viewer4.18/metadata.asp?activeLyr=1-385&active

http://imaps.dfg.ca.gov/viewers/viewer4.1...&metaStyle=dfg_imaps2.xsl&theBrowser=NN6

Fire Perimeters - Southern California, Fall 2007 [ds385]

Get Metadata

Contents

- Identification Information
- Data Quality
- Entity and Attribute Information
- Spatial Data Organization Information
- Spatial Reference Information
- Distribution Information
- Metadata Reference Information



Data in BIOS

- Internet Map Service (Browser) with:
 - Nearly 300 public datasets
 - Approx. 250 limited access, secure datasets including >65,000 records in Calif. Natural Diversity Database (CNDDDB)
 - More than 500 total datasets (and growing)



Comments? Suggestions?

BIOS

v4.11

1: 1,231,701 Set Scale



About iMaps

Refresh Map

Layer Legend

Active Layer: California Spotted Owl

BIOS Layers

California Spotted Owl - Southern Calif

Base Layers

- Cities
- Highways
- Hydrography 100k
- Hydrography 500k
- Lakes
- DFG Facilities
- DFG Lands
- 24k Quadrangles
- Counties
- Timber Harvest Boundaries (DFG R1)
- PLSS (projected)
- Calwater Watersheds
- USDA Ecoregion Provinces
- DFG Regions
- Public and Conservation Lands
- Mexico
- Western States

Images



Print Export Expand Zoom

ZOOM	MASTEROWL	COUNTY	OWNER	FOREST	DIST
1	SD001	SD	CA	CPR	PMT
2	SD002	SD	USFS	CLE	PAL
3	SD003	SD	PVT		PAL



BIOS DATA CATALOG

[HELP](#)

Available Layers (4 of 53 Layers)

- California Spotted Owls - Sierra Nevada
- California Spotted Owls - Southern Calif
- Northern Spotted Owl Database
- Northern Spotted Owls - Marin Co.

Checked Layers (0 of 53 Layers)



Select All Clear All

Add Checked Layers to Map

Filter Available Layers **Field** **Search Term**
 -- Choose Field --

Layer Group Contains "California Spotted Owl Database"

LAYER DETAILS

Name: California Spotted Owls - Southern Calif - Spatial Metadata	Id: 13
Abstract: This data set contains 3,259 observations of 441 known California spotted owl sites along the south coast of California from Monterey to Mexico and east to the east end of the Tehachapi Mountains. Site summary information includes location and status history. Observation files include observer, observation date and location, and occupancy status.	
Time Period: 1972 through 2001	Program: Biogeographic Information and Observation System



Types of Data...

- CA Natural Diversity Database (CNDDDB)
- T & E Species' Critical Habitats
- Individual Species Observations & Ranges
- Vegetation maps
- California Protected Areas Database (CPAD)
- Fish Passage Barriers
- Invasive Species



Thorough Metadata is Mandatory

- How did you do it
- Why did you do it
- When did you do it
- Outcomes
- Problems
- Scales
- Etc.





CalFish.org

Link to
BIOS Viewer

CALFISH
A CALIFORNIA COOPERATIVE ANADROMOUS
FISH AND HABITAT DATA PROGRAM

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Friday, October 24, 2008
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Welcome to CalFish

CalFish is a multi-agency cooperative program designed to gather, maintain, and disseminate fish and aquatic habitat data and data standards.

Two-Fold Mission:

To create, maintain, and enhance high quality, consistent data that are directly applicable to policy, planning, management, research, and recovery of anadromous fish and related aquatic resources in California; and

To provide data and information services in a timely manner in formats that meet the needs of users.





Chinook Range Query

California Department of Fish and Game - IMAPS Viewer - Mozilla Firefox

http://imaps.dfg.ca.gov/viewers/calfish/app.asp?LyrIDs=1-32|1-31|1-30|1-33|1-34|1-35|1-24|1-22|1-23|1-21|1-20|1-16|1-17|1-12|1-11|1-10|1-14|1-15|1-43|1-53|1-63|2-2|2-1|2-232|2-233|2-7|2-5|2-6|2-5b|2-3|2-4|3-2|3-5|3-209|3-1a|3-1

Comments? Suggestions? CalFish v4.17

1: 2,034,038 Set Scale

Refresh Map

Layer Legend

- Chinook Range
 - Probable
 - Possible
- Chinook Abundance - Linear Features
- Chinook Critical Habitat, NOAA - Central Valley
- Counties (100K)
- Western States
- Mexico

CDFG Viewer 257.8mi

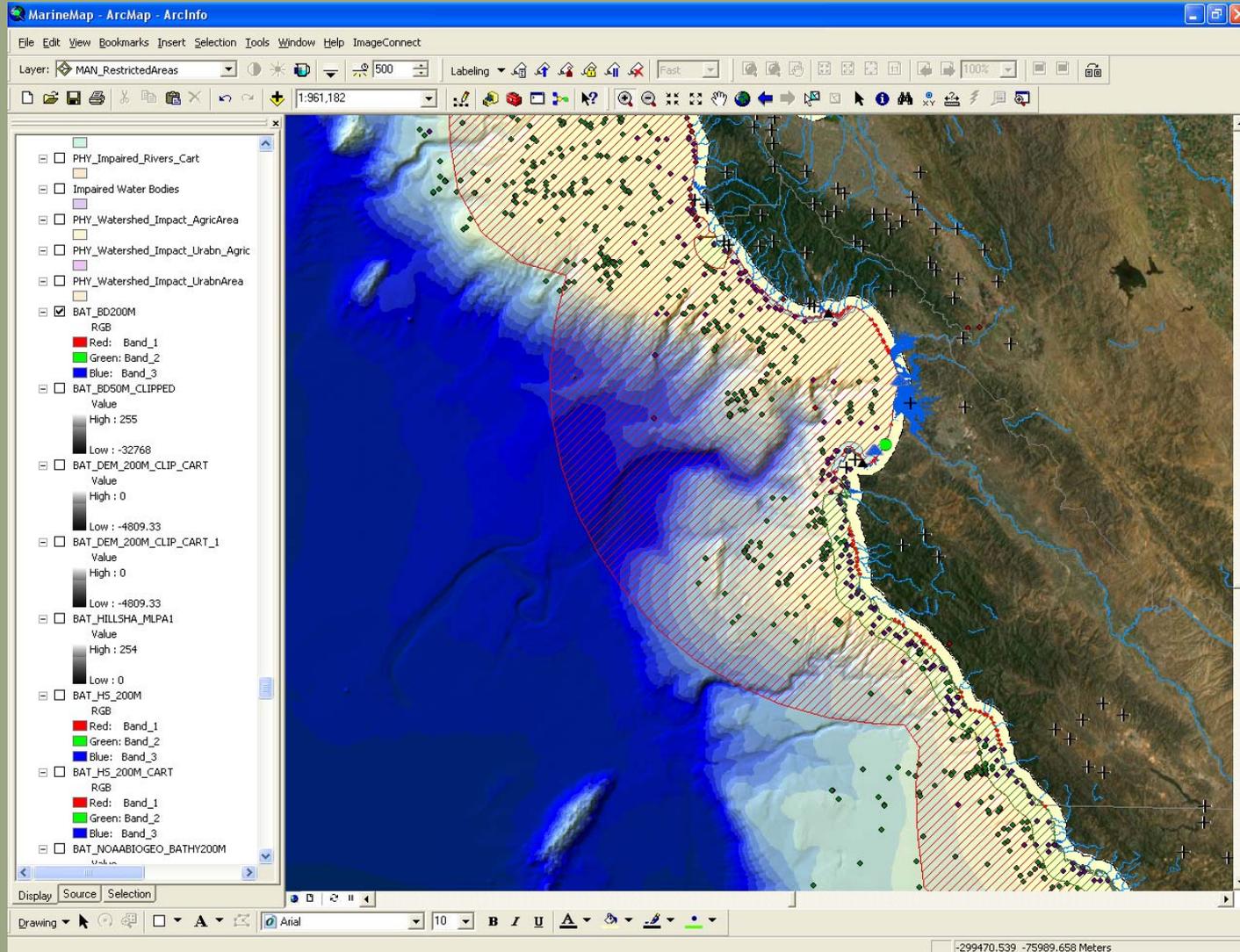
Print Export Expand

Identify Results for **Chinook Range** - 1 record identified

ZOOM	AREA	PERIMETER	CSPOLY	CSPOLY_ID	SPECIES	CONFIDENCE	CHAME	NATIVE
1	2044237696	727001.6875	4	2	Oncorhynchus tshawytscha	2	Chinook salmon	1



<Your map service/data here...>





Data Gathering

- We are not looking to acquire information *per se*, only to help it get liberated.
- We are not managing people's information, only offering a way to share it.
- We are contacting Department units/regions and partners to see if biologists have data sets they might wish to share.



Information Distribution

- BIOS provides a simple to use, interactive, free, web-based GIS viewer optimized for biogeographic data.
- Allows observation of data points on a number of map backgrounds.
- Provides metadata for each dataset, a view of the information of each record displayed on the active layer, an ability to print simple maps, and an ability to search each active data layer.



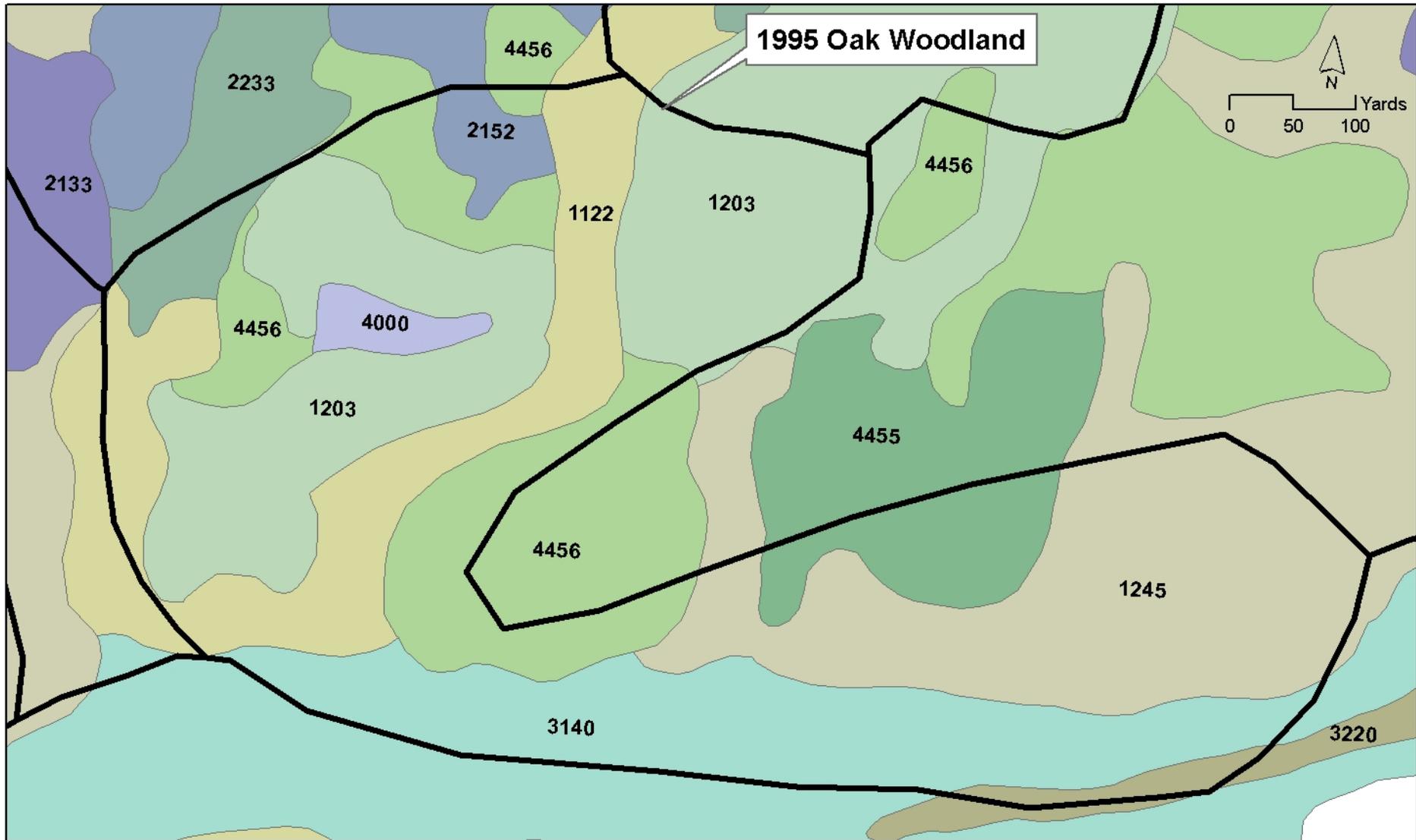
"Take Home" messages...

- BIOS is a mature "map" & database system and has been operational for several years,
- BIOS is a permanent program and a key to DFG's data management and science operations, and
- ... it's used successfully as an collaboration tool right now.



Problems with current vegetation mapping and information

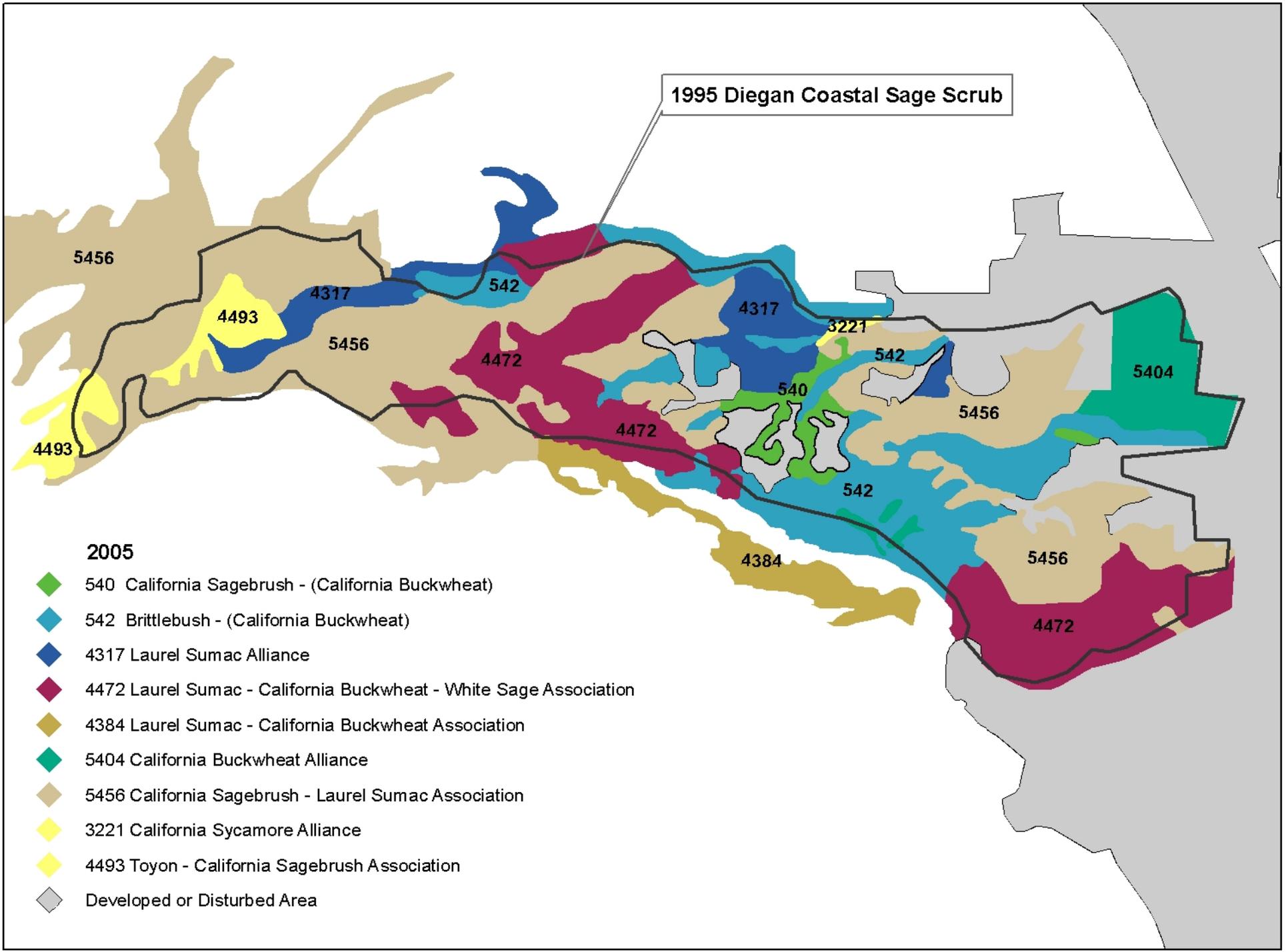
- Current vegetation mapping is limited to agencies' jurisdictions
- Each is done to address agency-specific business needs
- Our business needs are not being met by the most widespread mapping practices
- “Frankenmap” (California multi-source land cover map, 2002) uses all the best available data and stitches it together -- a patchwork quilt of many products, many scales, many dates



2005 Mapping Codes and Types

- | | |
|---|--|
|  1122 Canyon Live Oak Alliance |  2233 White Fir - Sugar Pine - Incense Cedar - Canyon Live Oak Association |
|  1203 Interior Live Oak - Canyon Live Oak Alliance |  3140 Black Oak - Incense Cedar Association |
|  1245 Interior Live Oak - Canyon Live Oak - Coulter Pine Association |  3220 White Alder Alliance |
|  2133 Coulter Pine / Eastwood Manzanita Alliance |  4000 Evergreen Shrubland Formation |
|  2152 Coulter pine - Canyon live oak / Pink-bracted Manzanita Association |  4455 Eastwood Manzanita - Interior Live Oak Association |
| |  4456 Eastwood Manzanita - Pink-bracted Manzanita Association |

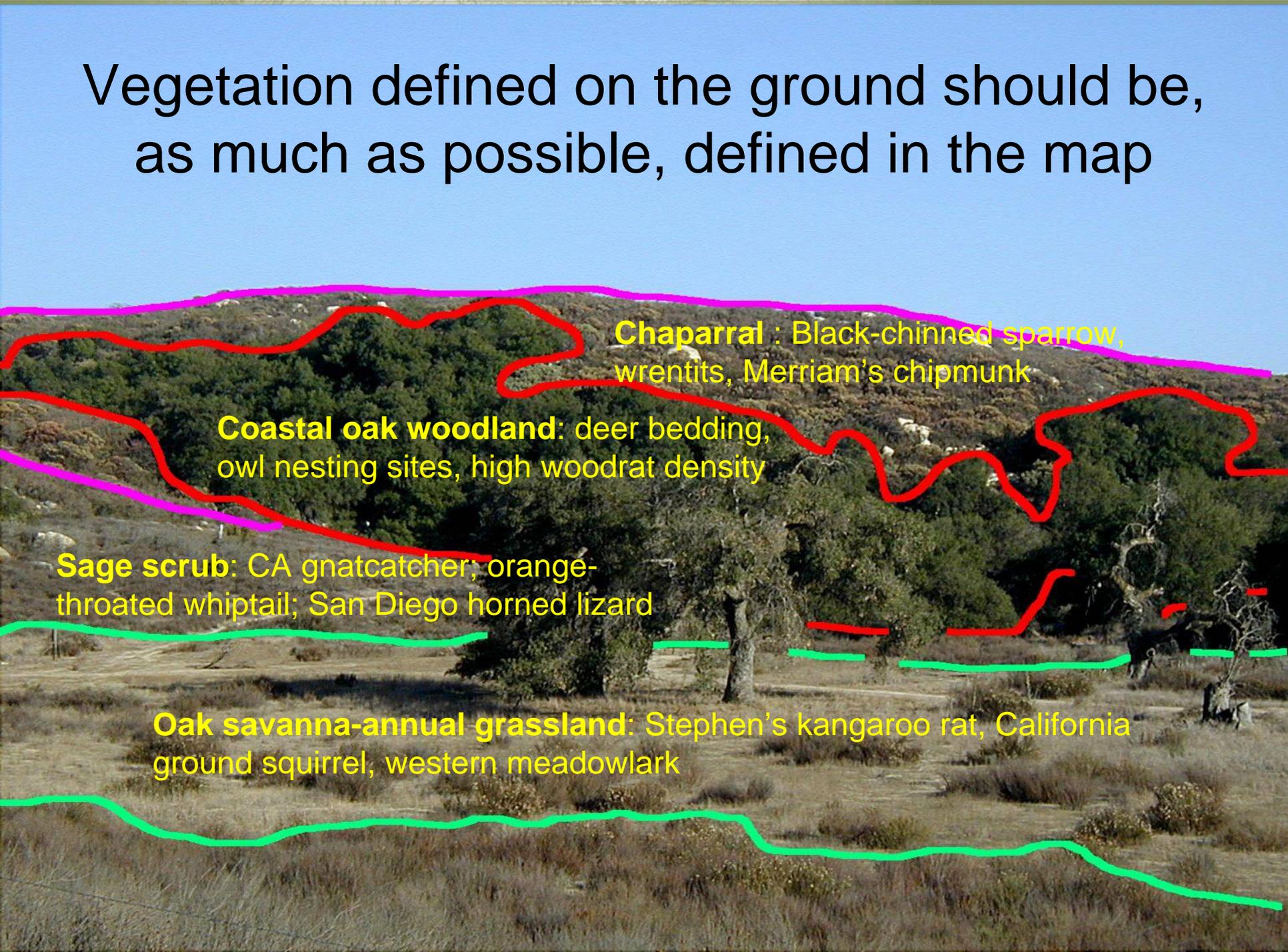
1995 Diegan Coastal Sage Scrub



2005

- ◆ 540 California Sagebrush - (California Buckwheat)
- ◆ 542 Brittlebush - (California Buckwheat)
- ◆ 4317 Laurel Sumac Alliance
- ◆ 4472 Laurel Sumac - California Buckwheat - White Sage Association
- ◆ 4384 Laurel Sumac - California Buckwheat Association
- ◆ 5404 California Buckwheat Alliance
- ◆ 5456 California Sagebrush - Laurel Sumac Association
- ◆ 3221 California Sycamore Alliance
- ◆ 4493 Toyon - California Sagebrush Association
- ◆ Developed or Disturbed Area

Vegetation defined on the ground should be, as much as possible, defined in the map

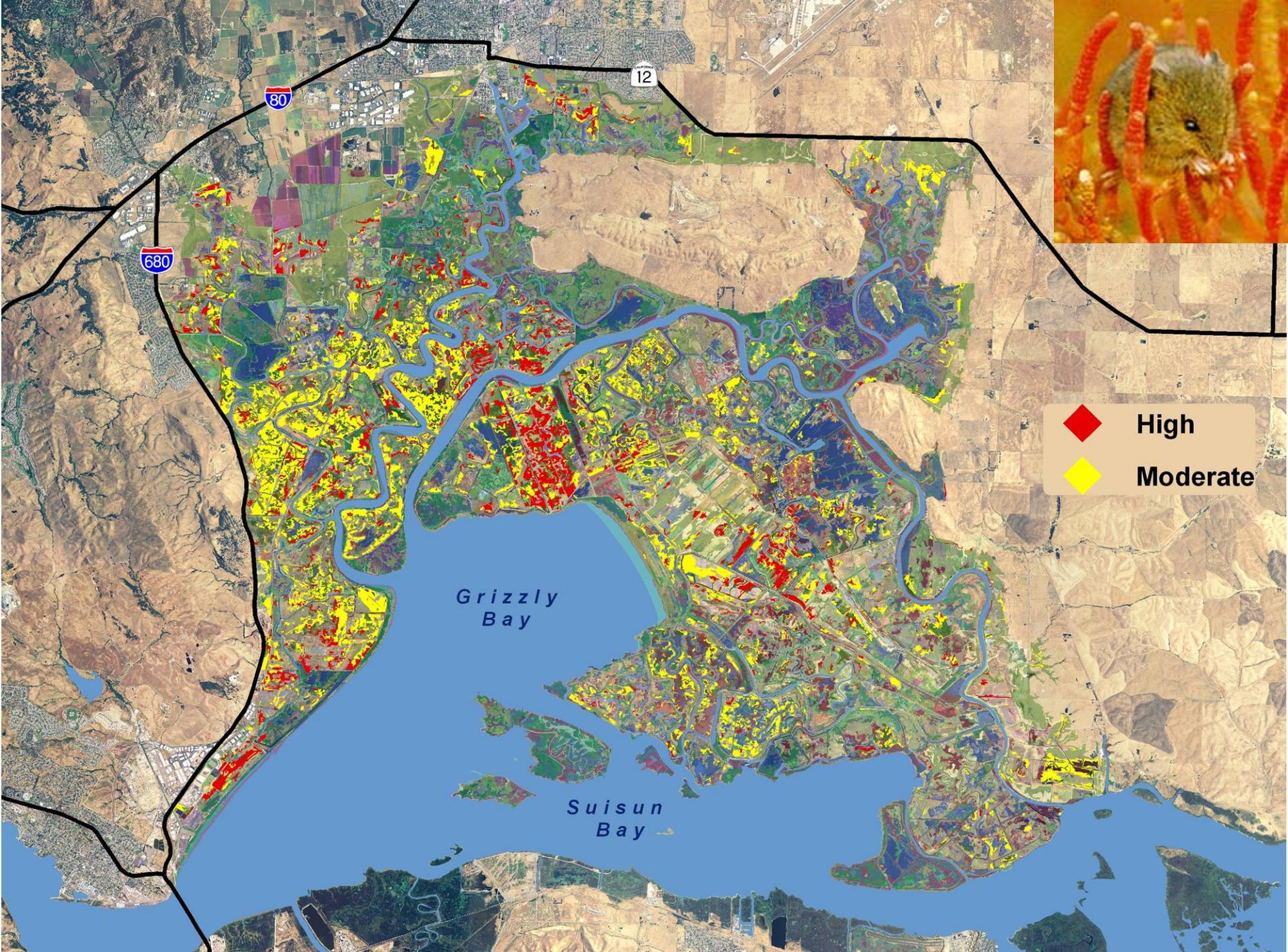


Chaparral : Black-chinned sparrow, wrentits, Merriam's chipmunk

Coastal oak woodland: deer bedding, owl nesting sites, high woodrat density

Sage scrub: CA gnatcatcher; orange-throated whiptail; San Diego horned lizard

Oak savanna-annual grassland: Stephen's kangaroo rat, California ground squirrel, western meadowlark



- ◆ High
- ◆ Moderate

Grizzly Bay

Suisun Bay

680

80

12

